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## PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

3712174-037

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on \_\_\_\_\_

Signature \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Application Number

09/162,992

Filed

September 30, 1998

First Named Inventor

Senoo et al.

Art Unit

1795

Examiner

Tracy Mae Dove

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.  
(Form PTO/SB/96)

☒ attorney or agent of record.  
Registration number 60,517

☐ attorney or agent acting under 37 CFR 1.34.  
Registration number if acting under 37 CFR 1.34 \_\_\_\_\_

  
Signature

Suzanne E. Konrad

Typed or printed name

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Telephone number

October 4, 2010

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.  
Submit multiple forms if more than one signature is required, see below\*.

☒ \*Total of 1 forms are submitted.

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Senoo et al.  
Appl. No.: 09/162,992  
Conf. No.: 9466  
Filed: September 30, 1998  
Title: GEL ELECTRODE SECONDARY CELL  
Art Unit: 1795  
Examiner: Tracy Mae Dove  
Docket No.: 3712174-00037

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

### PRE-APPEAL BRIEF

Sir:

This Pre-Appeal Brief is submitted in reply to the Final Office Action dated July 2, 2010. This Pre-Appeal Brief is filed contemporaneously with a "Pre-Appeal Brief Request for Review" and a "Notice of Appeal."

### REMARKS

This Pre-Appeal Brief, Notice of Appeal, and Pre-Appeal Brief Request for Review are submitted in response to the rejections of Claims 26-32 and 35-39 in the Final Office Action dated July 2, 2010. Applicants assert that the Examiner's rejections in the Final Office Action rise to the level of clear error and make the case proper for pre-appeal review. The sole independent Claim 26 at issue recites, in part, a gel electrolyte secondary cell comprising: a negative electrode comprising a current collector and a powder mixture composed of a graphite material having a mean particle size of 5 to 100  $\mu\text{m}$ ; and a gel electrolyte comprising an electrolyte salt, a non-aqueous solvent and a high-molecular weight material, wherein the non-aqueous solvent comprises propylene carbonate and ethylene carbonate, and wherein the graphite material is obtained by sintering meso-carbon micro-beads. If graphite is used as a negative electrode in a non-aqueous electrolyte cell, propylene is generally decomposed due to the instability of propylene carbonate against most graphite materials, thereby lowering the charge/discharge efficiency. See, Specification, page 2, paragraph 20. However, by providing propylene carbonate in combination with the claimed graphite material, an improved charge/discharge efficiency can be obtained. See, Specification, pages 4-5, paragraph 67; page 5, paragraphs 68-69 and 82; page 6, paragraphs 87-88; Tables 1-2.

In the Office Action, Claims 26-32 and 35-39 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,772,934 to MacFadden (“*MacFadden*”) in view of U.S. Patent No. 6,280,878 B1 to Maruyama et al. (“*Maruyama*”). Applicants respectfully submit that this rejection rises to the level of clear error because, even if combinable, *MacFadden* and *Maruyama* fail to disclose or suggest every element of the present claims.

For example, even if combinable, the combination of *MacFadden* and *Maruyama* fails to disclose or suggest a gel electrolyte secondary cell including a negative electrode comprising a powder mixture composed of a graphite material having a mean particle size of 5 to 100  $\mu\text{m}$ , wherein the graphite material is obtained by sintering meso-carbon micro-beads as recited, in part, by independent Claim 26. The Examiner admits that *MacFadden* is silent regarding the mean particle size of the graphite material and instead relies on *Maruyama* for the claimed graphite material. See, Final Office Action, page 5, lines 3-15. However, nowhere does *Maruyama* teach or suggest that its graphite is obtained by sintering meso-carbon micro-beads, nor does the Examiner cite support for such claimed element. Instead, the Examiner asserts that the limitation in Claim 26 that the graphite material is “obtained by sintering meso-carbon micro-beads” is a product-by-process claim which should not be given patentable weight “in the absence of unexpected results.” See, Final Office Action, page 2, lines 6-9.

Applicants respectfully submit that the Examiner’s failure to give the limitation “wherein the graphite material is obtained by sintering meso-carbon micro-beads” patentable weight rises to the level of clear error and is contrary to well-settled Federal Circuit precedent. The Federal Circuit recently stated that “process terms that define the product in a product-by-process claim serve as enforceable limitations.” *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282 (Fed. Cir. 2009). The Court further explained that “if an inventor invents a product whose structure is either not fully known or too complex to analyze. . . this court clarifies that the inventor is absolutely free to use process steps to define this product.” *Id.* Thus, Applicants respectfully submit that the limitation that “the graphite material is obtained by sintering meso-carbon micro-beads” should be given patentable weight.

Moreover, the Examiner’s requirement that the claimed product demonstrate unexpected results also rises to the level of clear error. The appropriate standard in determining whether the product-by-process claim is valid is not whether there are unexpected results but whether the resulting product is new and not obvious. *Amgen Inc. v. F. Hoffman-La Roche Ltd.*, 580 F.3d 1340 (Fed. Cir. 2009). For example, the court found that recombinant EPO “purified from

mammalian cells grown in culture” was distinguishable from urinary EPO because studies indicated that recombinant EPO had a higher molecular weight and different charge than urinary EPO due to differences in carbohydrate composition. *Id.* Similarly, a gel electrolyte secondary cell including the claimed graphite exhibits different properties, such as a higher charging/discharging efficiency, than a gel electrolyte secondary cell including graphite obtained by other means such as firing coke. See, Specification, page 5, paragraphs 78-79; page 6, paragraphs 92-93; Tables 1-2. Thus, the claim term wherein the graphite material is obtained by sintering meso-carbon micro-beads should be given proper patentable weight.

Furthermore, even if the Examiner’s standard of unexpected results is applied, the gel electrolyte secondary cell including the specific graphite material as claimed is not anticipated by or obvious over the graphite material of *Maruyama* because the Specification demonstrates unexpected results when the claimed graphite material is used. For example, Table 1 demonstrates initial charging/discharging efficiencies of 82.8% and 82.6% in a gel electrolyte cell when a graphite material obtained by sintering meso-carbon micro-beads is used as the anode material, whereas a significantly lower efficiency of only 61% is achieved in a gel electrolyte cell that is the entirely the same except for using a graphite material obtained by firing petroleum coke. See, Specification, page 4, paragraph 62; page 5, paragraphs 69, 71-72 and 77-78; Table 1. Similarly, Table 2 demonstrates initial charging/discharging efficiencies of 74.5% and 74.1% in a gel electrolyte cell when a graphite material obtained by sintering meso-carbon micro-beads is used as the anode material, whereas a significantly lower efficiency of only 56% is achieved in a gel electrolyte cell that is the entirely the same except for using a graphite material obtained by firing petroleum coke. See, Specification, page 5, paragraph 82; page 6, paragraphs 87-88 and 91-93; Table 2.

The Examiner asserts that Tables 1 and 2 do not show evidence of unexpected results because they do not distinguish the claimed material over the prior art of record. See, Final Office Action, page 10, lines 5-9. On the contrary, *Maruyama* fails to recognize any importance in how its graphite is formed and merely discloses that “[t]he carbon used as the active material may be properly selected from natural or artificial graphite, resin fired carbon materials, and carbon fibers. . . . Preferred among these is graphite desirably having a mean particle size of 1 to 30  $\mu\text{m}$ .” See, *Maruyama*, column 5, lines 9-13. Again, the Specification demonstrates unexpected results when a graphite material obtained by sintering meso-carbon micro-beads is used versus other graphite materials. See, Specification, Tables 1-2.

Thus, even if combinable, the combination of *MacFadden* and *Maruyama* fails to disclose or even suggest a gel electrolyte secondary cell including a negative electrode comprising a powder mixture composed of a graphite material having a mean particle size of 5 to 100  $\mu\text{m}$ , wherein the graphite material is obtained by sintering meso-carbon micro-beads in accordance with the present claims.

Accordingly, Applicants respectfully submit that the rejection of Claims 26-32 and 35-39 under 35 U.S.C. §103(a) to *MacFadden* and *Maruyama* should be withdrawn at least for these reasons.

In the Office Action, Claims 26-32 and 35-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over *MacFadden* in view of U.S. Patent No. 5,522,127 to Ozaki et al. ("*Ozaki*"). Applicants respectfully submit that this rejection rises to the level of clear error because one of ordinary skill in the art would have no reason to combine the cited references to arrive at the present claims. For example, it would not have been obvious to modify/combine the alleged propylene carbonate-containing cell of *MacFadden* with the mesophase graphite particles of *Ozaki* to arrive at the present claims because there would be no reasonable expectation of success in using a solvent containing propylene carbonate with the graphite particles of *Ozaki*. Indeed, *Ozaki* expressly teaches that propylene carbonate generates unfavorable side reactions with its graphite particles and is therefore not suitable for use with its graphite particles. See, *Ozaki*, column 7, lines 5-16. Moreover, one of ordinary skill in the art at the time of the invention would have understood that the degree of decomposition of propylene carbonate depends on the physical properties of the graphite material, which vary based on the starting material and the production process of the graphite material. See, Specification, page 2, paragraph 21, lines 1-7. One of ordinary skill in the art would thus have had no reasonable expectation of success in merely substituting the mesophase graphite particles of *Ozaki* for the graphite particles in the propylene carbonate-containing cell of *MacFadden* to arrive at the present claims. Therefore, Applicants respectfully submit that the rejection of Claims 26-32 and 35-39 under 35 U.S.C. §103(a) to *MacFadden* and *Ozaki* should be withdrawn at least for these reasons.

In the Office Action, Claims 26-32 and 35-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over European Patent No. 0724305 B1 to Akashi ("*Akashi*") in view of *Ozaki*. Applicants respectfully submit that this rejection rises to the level of clear error because one of ordinary skill in the art would have no reason to modify/combine the cited references to

arrive at the present claims. For example, it would not have been obvious to modify/combine the alleged propylene carbonate-containing cell of *Akashi* with the mesophase graphite of *Ozaki* to arrive at the present claims because there would be no reasonable expectation of success in using a solvent containing propylene carbonate with the graphite particles of *Ozaki* as discussed previously. Therefore, Applicants respectfully submit that the rejection of Claims 26-32 and 35-39 under 35 U.S.C. §103(a) to *Akashi* and *Ozaki* should be withdrawn at least for these reasons.

In the Office Action, Claims 26-32 and 34-39 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner asserts that the phrase "obtained by directly firing" lacks antecedent basis. See, Final Office Action, page 2, lines 15-22. Applicants respectfully disagree with the Examiner and submit that one skilled in the art would reasonably understand that claim 39 further requires that the sintering of the meso-carbon micro-beads (to obtain the graphite material as defined in independent claim 26) is obtained by directly firing the meso-carbon micro-beads at a temperature between 2500° C and 3500° C. Therefore, the alleged claim 39 term at issue should be deemed to have proper antecedent basis. To the extent the Examiner continues to maintain this rejection, Applicants may be amenable amending the claims for clarification and in a further attempt to resolve this issue.

Accordingly, Applicants respectfully request that the rejection of Claim 39 under 35 U.S.C. §112, second paragraph, rises to the level of clear error and should be withdrawn.

In light of the above, Applicants respectfully submit that the rejections of Claims 26-32 and 35-39 are improper and should be reversed. Accordingly, Applicants respectfully request that a timely Notice of Allowance be issued in this case. If any additional fees are due in connection with this application as a whole, the Commissioner is authorized to deduct such fees from deposit account no. 02-1818. If such a deduction is made, please indicate the attorney docket number (3712174-00037) on the account statement.

Respectfully submitted,

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Date: October 4, 2010